

DOUBLE GATE MOS TRANSISTORS AND METHODS OF MANUFACTURING DOUBLE GATE MOS TRANSISTORS

Abstract of the Disclosure

5 A double gate MOS transistor includes a substrate active region defined in a semiconductor substrate and a transistor active region located over the substrate active region and overlapped with the substrate active region. At least one semiconductor pillar penetrates the transistor active region and is in contact with the substrate active region. The semiconductor pillar supports the transistor active
10 region so that the transistor active region is spaced apart from the substrate active region. At least one bottom gate electrode fills a space between the transistor active region and the substrate active region. The bottom gate electrode is insulated from the substrate active region, the transistor active region and the semiconductor pillar. At least one top gate electrode crosses over the transistor active region and has at
15 least one end that is in contact with a sidewall of the bottom gate electrode. The top gate electrode overlaps with the bottom gate electrode and is insulated from the transistor active region. Methods of fabricating such transistors are also provided.